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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/589,132	08/11/2006	Hiroyuki Uono	294312US0PCT	5452

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EXAMINER	
LAIOS, MARIA J	

ART UNIT	PAPER NUMBER
1795	

NOTIFICATION DATE	DELIVERY MODE
07/12/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/589,132	UONO ET AL.	
	Examiner	Art Unit	
	MARIA J. LAIOS	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 April 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *18-37* is/are pending in the application.

4a) Of the above claim(s) *30,31,33,34,36 and 37* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *18-29, 32, 35* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11 August 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *20060811*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group I (claims 18-29, 32 and 35) in the reply filed on 15 April 2010 is acknowledged. Claims 30-31, 33-34, 36 and 37 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 15 April 2010.

Specification

2. The abstract of the disclosure is objected to because the term excellent is included within the abstract. The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.
Correction is required. See MPEP § 608.01(b).

3. The disclosure is objected to because of the following informalities: The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 18-22, 24-26, 28-29, 32 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zou et al. (US 2004/229125 A1) in view of Toshiya (JP 2002-175810).

As to claims 18, 19 and 26, 32 and 35, Zou et al. discloses a lithium ion rechargeable battery having a negative electrode; a lithium cobalt oxide as the positive electrode; an electrolyte (Paragraph 34). Zou et al. further discloses a negative active material coated onto a copper foil (current collector) to form the negative electrode (Paragraph 33). Zou et al. disclose the negative active material is a mixture of Graphite A and Graphite B, wherein Graphite B is man made graphite with an average diameter between 5-30 micrometers (Paragraph11). Graphite A is disclosed a core shell structure having a graphite granule as the core and a carbon layer coating on the surface of the graphite granule (Paragraph 13-14.) However Zou et al. does not disclose Graphite A as having a graphite with an aspect ratio between 1.2-4 and compounded with a graphite which has different orientation. Toshiya discloses an anode material for a lithium secondary battery comprising a graphite composite mixture powder comprising a scaly carbon (a natural graphite-Paragraph 13) with an aspect ratio greater than 1 and less than 6 (more preferably less than 3-Paragraph 11) and a spherical substance such as meso carbon beads, glassy carbon (Paragraph 27). By having a graphite covered by a spherical substance the orientation of the spherical substance is different from the graphite core (Paragraph 10). Toshiya teaches this

composite graphite material has sufficient hardness and adhesiveness (Paragraph 7). Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to replace graphite A of Zou et al. with the graphite material of Toshiya to ensure sufficient hardness and adhesiveness of the active material to the current collector.

As to claims 20, 28 and 29, modified Zou et al. discloses a mixture of Graphite A and Graphite B. Where Graphite B is man made graphite with an average diameter between 5-30 micrometers (Paragraph11 of Zou et al.) and Graphite A (compound of Toshiya) is a composite of a graphite with an aspect ratio of 1.2-4 (equivalent to Graphite D of instant application) compounded with a spherical substance which has a different orientation of the graphite (equivalent to Graphite E of instant application). Graphite powder A has the following properties graphite composite has BET of 5 m2/g or below (Paragraph 22 point c) and a particle diameter of between 1-100 and preferably between 5-50 micrometers (Paragraph 26). It is expected that composite mixture powder C has a similar tap density, BET and interlayer spacing, electrode density and discharging capacity as claimed since composite mixture powder C is made of Graphite A of Toshiya and Graphite B of Zou et al.

As to claim 21, Toshiya discloses the aspect ratio of the scaly carbon and the spherical substance to between 1.1-2.9 (Paragraph 9 point 1). The court have held that "[A] prior art reference that discloses a range encompassing a somewhat narrower claimed range sufficient to establish a prima facie case of obviousness." *In re Peterson*, 315 F.3d 1325, 1330, 65 USPQ2d 1379, 1382-83 (Fed. Cir. 2003). See MPEP 2144.05.

As to claim 22, Toshiya discloses the graphite composite has BET of 5 m2/g or below (Paragraph 22 point c) and a particle diameter of between 1-100 and preferably between 5-50

micrometers (Paragraph 26) but does not state the tap density of the material between 0.8-1.35 g/cm3. However it is the position of the examiner that this is expected to be inherent to the powder since the particle diameter, the BET surface area and the aspect ratio of the material fall within the claimed range and since the taping density is related to the shape and size of the particles.

As to claim 24, Toshiya disclose the ratio of spherical substance to scaly carbon to be 40 or less and most preferably 50 % or less and greater than 5% (Paragraph 31). Toshiya teaches that if the ratio is too small the effect of increasing the film strength and the adhesive property is minimize and if it is too large then the capacity of the battery falls (Paragraph 31). Therefore it would have been obvious to one of ordinary skill in the art to adjust the amount of the scaly graphite to the powder because this provides sufficient adhesiveness and capacity for the battery.

As to claim 25, Zou et al. discloses the amount of Graphite A to Graphite B as between 25:75 and 80:20 (Paragraph 18). Graphite A is the graphite composite and Graphite B is the artificial graphite. Thus the ratio of the graphite composite powder (Graphite A) to the amount of graphite composite (Graphite A) and artificial graphite (Graphite B) falls within the claimed range.

As to claim 26, Zou et al. discloses that Graphite B is and artificial graphite and Toshiya discloses that the spherical substance is also an artificial graphite (Paragraph 27). Therefore the material can be the same.

6. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zou et al. (US 2004/229125 A1) and Toshiya (JP 2002-175810) as applied to claims 18-22, 24-26,28-29, 32 and 35 above, and further in view of Sato et al. (US 20003/0134201).

As to claim 23, Zou et al. disclose the Graphite B is man made graphite with an average diameter between 5-30 micrometers (Paragraph11) but does not disclose the BET specific surface are between 0.3-3 m2/g. Sato et al. disclose a lithium battery and teaches a carbon

coated graphite material having a preferred BET specific surface of 0.1-4 m2/g (Paragraph 49). Sato teaches that BET affects the charge/discharge characteristics of the battery (Paragraph 50) thus recognizing BET as a result effective variable. Therefore it would have been within the skill of the ordinary artisan to adjust the BET surface area of Graphite B of Zou et al. of obtain favorable rapid charge/discharge characteristics within the battery. Discover of optimum value of result effective variable in known process is ordinarily within skill of art. *In re Boesch, CCPA 1980, 617 F.2d 272, 205 USPQ215.*

7. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zou et al. (US 2004/229125 A1) and Toshiya (JP 2002-175810) as applied to claims 18-22, 24-26,28-29, 32 and 35 above, and further in view of Takashi (JP 2001-236950)

As to claim 27, modified Zou et al. discloses a negative active material (Graphite (C)) comprising a mixture of Graphite A (comprising a powder of a graphite (D) with an aspect ratio as claimed compounded with a graphite (E) which has a different orientation from graphite (D)) and Graphite B (comprising an artificial graphite) as is disclosed above and incorporated herein but does not disclose a third graphite comprising a natural graphite powder (Graphite (G)) or the ratio of Graphite (C) to the total amount of Graphite (C) and Graphite (G) is between 20-90 weight percent. Takashi discloses a negative electrode with three types of carbon materials including a scaly carbon (natural carbon) and specifically teaches adding scaly carbon in the amount of 35 weight percent (Paragraph 37). By using a mixture of carbon materials the charge/discharge cycle performance can be enhanced (Paragraph 61). It would have been obvious to one of ordinary skill in the art at the time of the invention to include a third graphite

to the battery of Zou et al. because Takashi discloses that a mixture of three types of carbon can be adjusted to enhance the performance of the battery.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARIA J. LAIOS whose telephone number is (571)272-9808. The examiner can normally be reached on 11am-7pm Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dah-Wei Yuan can be reached on 571-272-1295. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. J. L./
Examiner, Art Unit 1795

/Dah-Wei D. Yuan/
Supervisory Patent Examiner, Art Unit 1795